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(54) Title: ORGANOSILICATE RESIN FORMULATION FOR USE IN MICROELECTRONIC DEVICES

(57) Abstract: A curable organosilicate composition that is employed to form one or more layers in the fabrication of electronic devices comprising: (a) an alkoxy or acyloxy silane having at least one group containing ethylenic unsaturation which group is bonded to the silicon atom (b) an alkoxy oracyloxy silane having at least one group containing an aromatic ring which group is bonded to the silicon atom, (c) a latent acid catalyst, and (d) optionally an alkoxy or acyloxy silane having at least one C₁-C₆ alkyl group bonded to the silicon atom.

WO 2004/090965 A3

INTERNATIONAL SEARCH REPORT

International Application No.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L21/312 C08L83/06 C08L83/07

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01L C09D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 02/16477 A2 (THE DOW CHEMICAL COMPANY) 28 February 2002 (2002-02-28) cited in the application claims; examples 6,10	1-10
Y	EP 1 246 239 A (JSR CORPORATION) 2 October 2002 (2002-10-02) paragraphs '0025!', '0026!', '0036!', '0039!', '0078!', '0080!', '0081!	1-10
A	US 6 406 794 B1 (SHIOTA ATSUSHI ET AL) 18 June 2002 (2002-06-18) column 3, line 56 - column 4, line 44 column 7, line 14 - line 25	1-10
A	US 5 700 899 A (AOKI ET AL) 23 December 1997 (1997-12-23) column 2, line 19 - line 30 column 5, line 22 - line 50	1-10

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Patent family members are listed in annex.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0216477	A2	28-02-2002	CN 1447981 T 08-10-2003 EP 1314193 A2 28-05-2003 JP 2004506797 T 04-03-2004 US 2002052125 A1 02-05-2002
EP 1246239	A	02-10-2002	JP 2002299441 A 11-10-2002 EP 1246239 A1 02-10-2002 TW 586204 B 01-05-2004 US 2002142586 A1 03-10-2002
US 6406794	B1	18-06-2002	NONE
US 5700899	A	23-12-1997	JP 3123351 B2 09-01-2001 JP 8003450 A 09-01-1996 DE 69519698 D1 01-02-2001 DE 69519698 T2 07-06-2001 EP 0687718 A1 20-12-1995